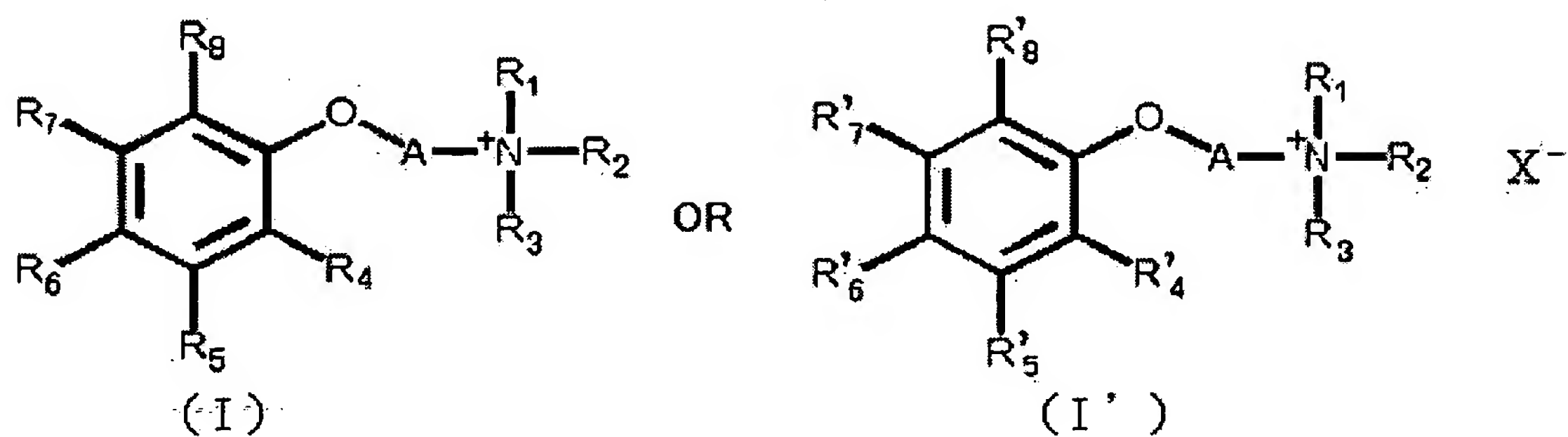


CLAIMS

1. A quaternary ammonium compound represented by general formula (I) or (I'):



(wherein, A represents a linear alkyl group having 1 to 4 carbon atoms, a branched alkyl group having 2 to 4 carbon atoms, a linear alkyl group having 1 to 4 carbon atoms and a hydroxyl group, or a branched alkyl group having 2 to 4 carbon atoms and a hydroxyl group, R_1 to R_3 may be the same or different and represent a linear or branched alkyl group having 1 to 12 carbon atoms, one of R_4 to R_8 represents CO_2^- or SO_3^- , while no more than three of the remaining R_4 to R_8 represent a group selected from the group consisting of a hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, and other R_4 to R_8 represent a hydrogen atom, one of R'_4 to R'_8 represents CO_2H or SO_3H , no more than three of the remaining R'_4 to R'_8 represent a group selected from a protected hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, while other R'_4 to R'_8 represent a hydrogen atom, and X^- represents an anion capable of forming a salt with

a quaternary ammonium group).

2. A quaternary ammonium compound according to claim 1, wherein one of R_4 to R_8 is CO_2^- , or one of R'_4 to R'_8 is CO_2H .

3. A quaternary ammonium compound according to claim 1, wherein one of R_4 to R_8 is SO_3^- , or one of R'_4 to R'_8 is SO_3H .

4. A quaternary ammonium compound according to claim 2, wherein one of the remaining R_4 to R_8 or one of the remaining R'_4 to R'_8 is a hydroxyl group.

5. A quaternary ammonium compound according to claim 3, wherein one of the remaining R_4 to R_8 or one of the remaining R'_4 to R'_8 is a hydroxyl group.

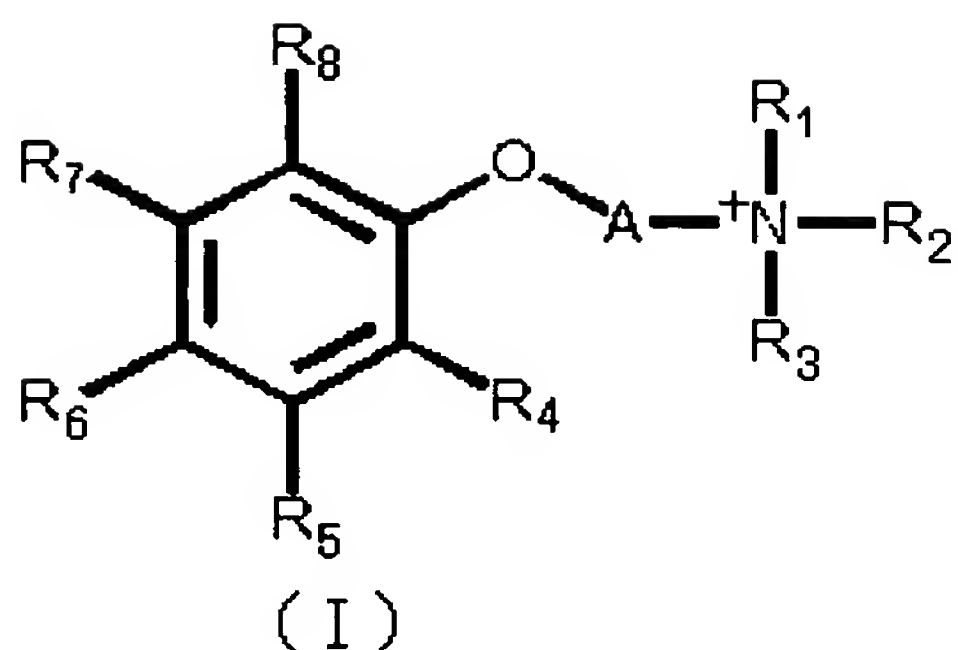
6. A quaternary ammonium compound according to claim 4, wherein A is a linear alkyl group having 2 carbon atoms.

7. A quaternary ammonium compound according to claim 5, wherein A is a linear alkyl group having 2 carbon atoms.

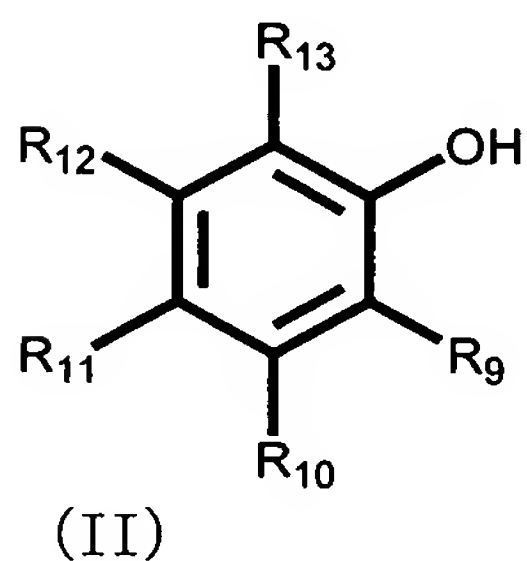
8. A quaternary ammonium compound according to claim 6, wherein R_1 to R_3 are methyl groups.

9. A quaternary ammonium compound according to claim 7, wherein R_1 to R_3 are methyl groups.

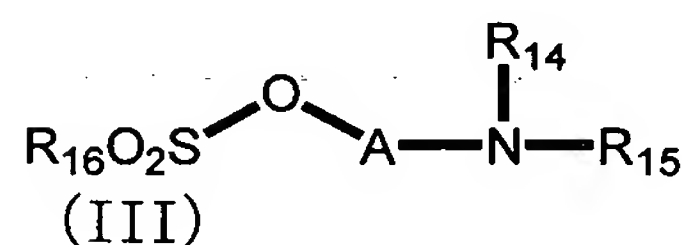
10. A process for producing a quaternary ammonium compound represented by general formula (I):



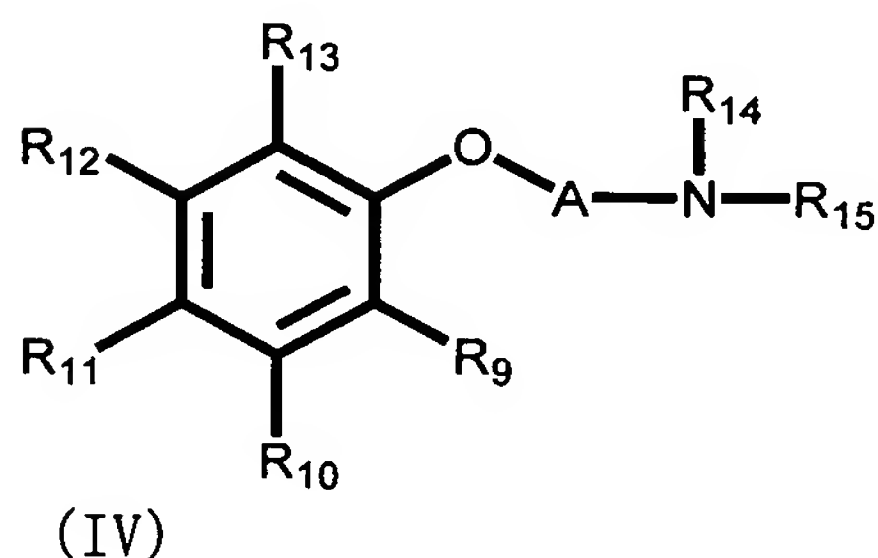
(wherein, A represents a linear alkyl group having 1 to 4 carbon atoms, a branched alkyl group having 2 to 4 carbon atoms, a linear alkyl group having 1 to 4 carbon atoms and a hydroxyl group, or a branched alkyl group having 2 to 4 carbon atoms and a hydroxyl group, R_1 , R_2 and R_3 may be the same or different and represent a linear or branched alkyl group having 1 to 12 carbon atoms, one of R_4 to R_8 represents CO_2^- or SO_3^- , while no more than three of the remaining R_4 to R_8 represent a group selected from the group consisting of a hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, and other R_4 to R_8 represent a hydrogen atom) comprising: reacting with a phenol derivative represented by general formula (II):



(wherein, one of R₉ to R₁₃ represents a carboxyl group protected or a sulfonic acid group by an ester group, no more than three of the remaining R₉ to R₁₃ represent a group selected from the group consisting of a protected hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, and other R₉ to R₁₃ represent a hydrogen atom) a sulfonic acid ester derivative represented by general formula (III):

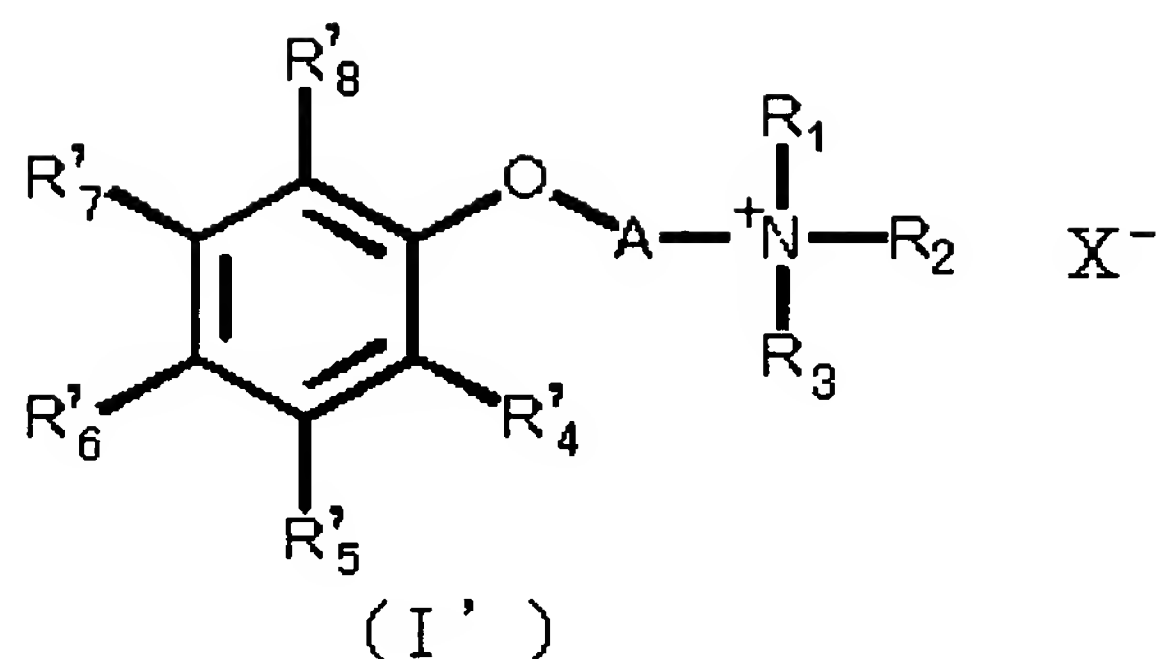


(wherein, A represents a linear alkyl group having 1 to 4 carbon atoms, a branched alkyl group having 2 to 4 carbon atoms, a linear alkyl group having 1 to 4 carbon atoms and a hydroxyl group, or a branched alkyl group having 2 to 4 carbon atoms and a hydroxyl group, R₁₄ to R₁₅ may be the same or different and represent a linear or branched alkyl group having 1 to 12 carbon atoms, and R₁₆ represents a lower alkyl group having 1 to 4 carbon atoms or an aryl group having 6 to 7 carbon atoms) in an organic solvent and in the presence of a basic substance, to obtain an amino compound represented by general formula (IV):

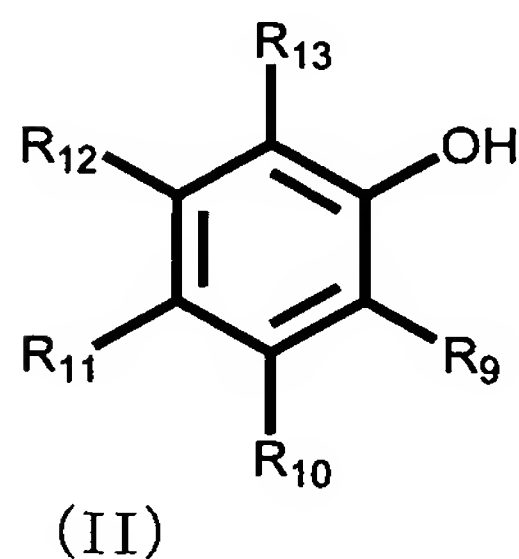


(wherein, A represents a linear alkyl group having 1 to 4 carbon atoms, a branched alkyl group having 2 to 4 carbon atoms, a linear alkyl group having 1 to 4 carbon atoms and a hydroxyl group, or a branched alkyl group having 2 to 4 carbon atoms and a hydroxyl group, one of R_9 to R_{13} represents a carboxyl group or a sulfonic acid group protected by an ester group, no more than three of the remaining R_9 to R_{13} represent a group selected from the group consisting of a protected hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, other R_9 to R_{13} represent a hydrogen atom, and R_{14} to R_{15} may be the same or different and represent a linear or branched alkyl group having 1 to 12 carbon atoms), and a linear or branched alkyl halide having 1 to 12 carbon atoms or a sulfonic acid ester esterified by a linear or branched alkyl group having 1 to 12 carbon atoms is reacted with a compound represented by general formula (IV), followed by de-protecting the carboxyl group or the sulfonic acid group protected by an ester group, and the protected hydroxyl group, and treating with an ion exchange resin.

11. A process for producing a quaternary ammonium compound represented by general formula (I'):

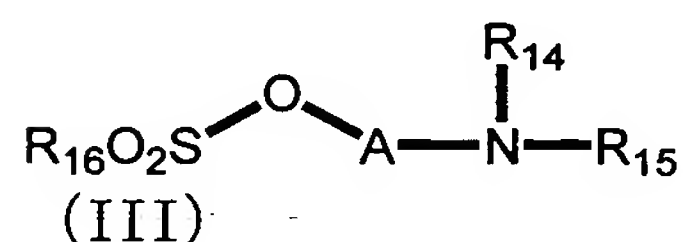


(wherein, A represents a linear alkyl group having 1 to 4 carbon atoms, a branched alkyl group having 2 to 4 carbon atoms, a linear alkyl group having 1 to 4 carbon atoms and a hydroxyl group, or a branched alkyl group having 2 to 4 carbon atoms and a hydroxyl group, R_1 , R_2 and R_3 may be the same or different and represent a linear or branched alkyl group having 1 to 12 carbon atoms, one of R'_4 to R'_8 represents CO_2H or SO_3H , while no more than three of the remaining R'_4 to R'_8 represent a group selected from the group consisting of a hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, other R'_4 to R'_8 represent a hydrogen atom, and X^- represents an anion capable of forming a salt with a quaternary ammonium group) comprising: reacting with a phenol derivative represented by general formula (II):

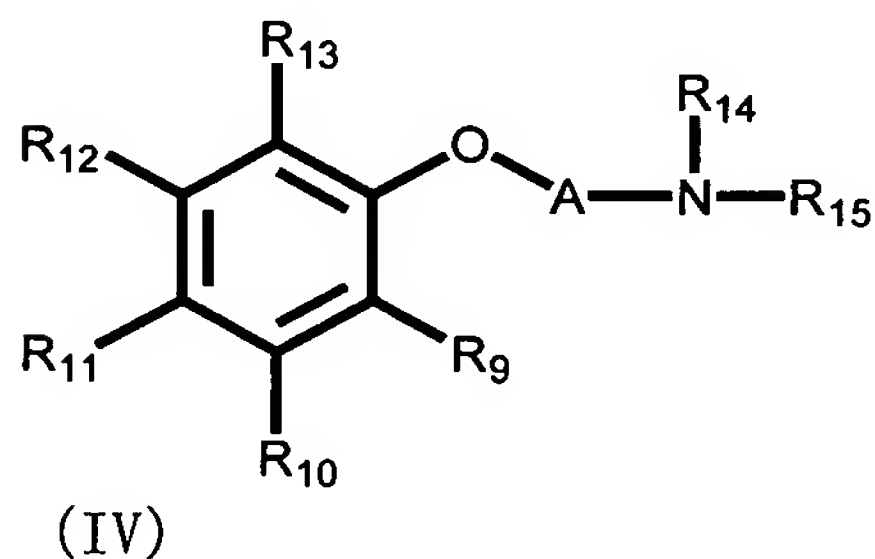


(wherein, one of R_9 to R_{13} represents a carboxyl group or a

sulfonic acid group protected by an ester group, no more than three of the remaining R_9 to R_{13} represent a group selected from the group consisting of a protected hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, and other R_9 to R_{13} represent a hydrogen atom) a sulfonic acid ester derivative represented by general formula (III):



(wherein, A represents a linear alkyl group having 1 to 4 carbon atoms, a branched alkyl group having 2 to 4 carbon atoms, a linear alkyl group having 1 to 4 carbon atoms and a hydroxyl group, or a branched alkyl group having 2 to 4 carbon atoms and a hydroxyl group, R_{14} to R_{15} may be the same or different and represent a linear or branched alkyl group having 1 to 12 carbon atoms, and R_{16} represents a lower alkyl group having 1 to 4 carbon atoms or an aryl group having 6 to 7 carbon atoms) in an organic solvent and in the presence of a basic substance, to obtain an amino compound represented by general formula (IV):



(wherein, A represents a linear alkyl group having 1 to 4 carbon atoms, a branched alkyl group having 2 to 4 carbon atoms, a linear alkyl group having 1 to 4 carbon atoms and a hydroxyl group, or a branched alkyl group having 2 to 4 carbon atoms and a hydroxyl group, one of R₉ to R₁₃ represent a carboxyl group or a sulfonic acid group protected by an ester group, no more than three of the remaining R₉ to R₁₃ represent a group selected from the group consisting of a protected hydroxyl group and an alkoxy group having 1 to 4 carbon atoms, other R₉ to R₁₃ represent a hydrogen atom, and R₁₄ to R₁₅ may be the same or different and represent a linear or branched alkyl group having 1 to 12 carbon atoms), and a linear or branched alkyl halide having 1 to 12 carbon atoms or a sulfonic acid ester esterified by a linear or branched alkyl group having 1 to 12 carbon atoms is reacted with a compound represented by general formula (IV), followed by de-protecting the carboxyl group or the sulfonic acid group protected by an ester group, and the protected hydroxyl group, and treating with an acidic substance.

12. A process for producing a quaternary ammonium compound represented by general formula (I) or (I') according to claim 10, wherein the organic solvent used in the step for reacting a sulfonic acid ester derivative represented by general formula (III) with a phenol derivative represented by general formula (II) is an alcohol, ether or amide organic solvent.

13. A process for producing a quaternary ammonium compound represented by general formula (I) or (I') according to claim 12, wherein R_{16} of general formula (III) is a methyl group.
14. A process for producing a quaternary ammonium compound represented by general formula (I) or (I') according to claim 13, wherein the organic solvent used in the step for reacting a sulfonic ester derivative represented by general formula (III) with a phenol derivative represented by general formula (II) is an ether organic solvent having 4 to 6 carbon atoms.
15. A cerebrovascular disease therapeutic agent having for an active ingredient a quaternary ammonium compound according to claim 1.
16. A cerebrovascular disease therapeutic agent according to claim 15, wherein the cerebrovascular disease is cerebral infarction, cerebral thrombosis, cerebral embolism, transient ischemic attack or a functional disorder caused by these diseases.
17. A use of a quaternary ammonium compound according to claim 1 for producing a cerebrovascular disease therapeutic agent.
18. A treatment method for a cerebrovascular disease using a quaternary ammonium compound according to claim 1.
19. A heart disease therapeutic agent having for an active ingredient thereof a quaternary ammonium compound according to claim 1.

20. A use of a quaternary ammonium compound according to claim 1 to produce a heart disease therapeutic agent.

21. A treatment method for a heart disease using a quaternary ammonium compound according to claim 1.